Consultative Committee for Space Data Systems

DRAFT RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS

AOS SPACE DATA LINK PROTOCOL

CCSDS 732.0-~~B~~P-1.2

~~BLUE BOOK~~PINK SHEETS

~~September 2003~~May 2004

NOTES

1 Transfer Frames containing Idle Data in their Data Fields are sent to maintain synchronization at the receiver and also to transmit data in the Transfer Frame Insert Zone when there is no Data Field to send.

2 Idle Data in the Transfer Frame Data Field of an Idle Transfer Frame must not be confused with the Idle Packet specified in reference [6].

4.1.4.2 Multiplexing Protocol Data Unit

4.1.4.2.1 Overview

4.1.4.2.1.1 The Multiplexing Protocol Data Unit (M_PDU) shall follow, without gap, the Transfer Frame Primary Header or the Transfer Frame Insert Zone if present.

4.1.4.2.1.2 The length of the M_PDU shall be fixed by management for any particular Virtual Channel, since it is required to fit exactly within the fixed-length Transfer Frame Data Field.

NOTE – The length of M_PDUs carried by a Physical Channel which supports the Insert Service must take into account the fixed length of the optional Insert Zone.

4.1.4.2.1.3 The M_PDU shall be divided as follows:

a) M_PDU Header (2 octets, mandatory);

b) M_PDU Packet Zone (integral number of octets, mandatory).

4.1.4.2.1.4 The M_PDU Header shall be sub-divided as follows:

a) ~~Reserved Spare (5 bits, mandatory)~~Virtual Channel Frame Count Cycle (4 bits, optional);

b) VC Frame Count Cycle Use flag (1 bit, mandatory);

c) First Header Pointer (11 bits, mandatory).

4.1.4.2.1.5 The format of the M_PDU is shown in figure 4-3.

M_PDU HEADER				M_PDU PACKET ZONE				
~~RSVD. SPARE~~ ~~5 bits~~	VC FRAME COUNT CYCLE 4 bits	VC FRAME COUNT CYCLE USE FLAG 1 bit	FIRST HEADER POINTER 11 bits	END OF PREVIOUS CCSDS PACKET #k	CCSDS PACKET #k+1	. . . . .	CCSDS PACKET #m	START OF CCSDS PACKET #m+1

Figure 4-3: Multiplexing Protocol Data Unit (M_PDU)

~~**4.1.4.2.2 Reserved Spare**~~

~~**4.1.4.2.2.1 Bits 0–4 of the M_PDU Header shall contain the Reserved Spare.**~~

~~**4.1.4.2.2.1** This five-bit Reserved Spare field is currently undefined by CCSDS; by convention, it shall therefore be set to the reserved value of '00000'.~~

4.1.4.2.2 Virtual Channel Frame Count Cycle

4.1.4.2.2.1 If used, bits 0–3 of the M_PDU Header shall contain the Frame Count Cycle of the Virtual Channel ID (in the Transfer Frame Primary Header).

4.1.4.2.2.2 Each time the Virtual Channel Frame Count returns to zero, the VC Frame Count Cycle shall be incremented.

NOTE – The VC Frame Count Cycle effectively extends the Virtual Channel Frame Count from 24 to 28 bits.

4.1.4.2.2.3 If not used, bits 0–3 of the M_PDU Header shall be set to 'all zeros'.

4.1.4.2.3 VC Frame Count Cycle Use Flag

4.1.4.2.3.1 Bit 4 of the M_PDU Header shall contain the VC Frame Count Cycle Use flag.

4.1.4.2.3.2 This one-bit field shall indicate whether the VC Frame Count Cycle field is used; its value shall be interpreted as follows:

a) '0' = VC Frame Count Cycle field is not used and shall be ignored by the receiver;

b) '1' = VC Frame Count Cycle field is used and shall be interpreted by the receiver.

4.1.4.2.4 First Header Pointer

4.1.4.2.4.1 Bits 5–15 of the M_PDU Header shall contain the First Header Pointer.